

## CLAIMS

What is claimed is:

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1. A hardware upgrade for enhancing the functionality of a set top converter in a television program delivery system, each set top converter having a mailbox adapted to receive electronic mail, the hardware upgrade comprising:
    - an interface for providing an electrical connection to the set top converter, whereby the electronic mail is transferred from the set top converter for processing and the processed electronic mail is passed to the set top converter for display;
    - a memory for storing interactive programming instructions; and
    - at least one microprocessor connected to said memory and connected to said interface for accessing the stored interactive programming instructions and for processing the electronic mail to produce processed electronic mail based on the stored interactive programming instructions.
  2. The hardware upgrade according to claim 1, wherein said television program delivery system comprises digital video.
  3. The hardware upgrade according to claim 1, wherein the interface is a mailbox interface and the electronic mail is transferred between the set top converter and the mailbox interface in a serial or a parallel format.
  4. The hardware upgrade according to claim 1, wherein the interface comprises:
    - circuitry for receiving subscriber inputs from the set top converter, wherein the received subscriber inputs include textual information that is used to produce the processed electronic mail and for transferring the processed electronic mail to the set top converter for display.
  5. The hardware upgrade according to claim 1, for use with on-line databases, interactive services and message services outside of the television program delivery system, wherein the hardware upgrade further comprises a telephone modem connected to the at least one

microprocessor and adapted to provide communications capability with the on-line databases, interactive services and message services.

- Sub a17
- 5 6. The hardware upgrade according to claim 4, further comprising:  
a high volume memory connected to the at least one microprocessor for storing the processed electronic mail.
  - 10 7. An advanced set top terminal for use with a television program delivery system comprising:  
a memory for storing menu content information;  
a receiver for receiving digitally compressed program signals and a control information stream;  
a signal processor connected to the memory and the receiver for processing the control information stream to produce processed control information, whereby the processed control information is used to update the stored menu content information to produce updated menu content information;  
a generator connected to the memory for generating message and menu displays using the updated menu content information, whereby the displays produce subscriber options for selection of other menus and television programs;  
20 a subscriber interface in communication with the generator for selecting messages, menus, television programs or for entry of subscriber inputs; and  
a tuner connected to the interface for tuning to one of the digitally compressed program signals to produce a tuned television program signal.
  - 25 8. The advanced set top terminal according to claim 7, wherein said television program delivery system comprises digital video.
  - 30 9. The advanced set top terminal according to claim 7, further comprising:  
a second signal processor connected to the tuner for processing the tuned television program signal to produce a video signal and audio signal for television display and listening.

10. The advanced set top terminal according to claim 7 capable of operating with an interactive electronic mail service conducted from a cable headend or other remote location further comprising:

a memory for storing the interactive programming instructions;

at least one processor connected to the memory for accessing the stored interactive programming instructions and for executing the stored interactive programming instructions to produce interactive signals which include electronic mail; and

a data transmitter connected to the at least one processor for transmitting the produced interactive signals to the cable headend or the other remote location.

11. The advanced set top terminal according to claim 7, for use with on-line databases, interactive services and message services outside of the television program delivery system, wherein the hardware upgrade further comprises a telephone modem, connected to the at least one processor adapted to provide communications capability with the on-line databases, interactive services and message services.

12. A system to provide a subscriber electronic mail services with a remotely located computer using a series of individual menus, comprising:

an operations center for generating menu control information in digitally compressed form and transmitting said menu control information;

a cable headend for receiving said transmitted menu control information and transmitting said transmitted menu control information to at least one television terminal; and

at least one television terminal for displaying menus on a television, wherein said at least one television terminal comprises:

a decompressor for decompressing the menu control information;

a menu generator for generating menus from the menu control information;

a subscriber interface for interactively entering information using said generated menus;

a transmitter for communicating with said cable headend;  
a receiver for receiving electronic mail from said cable headend; and  
a text and graphics video plane combiner for integrating the electronic  
mail into menus.

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13. The system according to claim 12, wherein said television program delivery system comprises digital video.
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14. The system according to claim 12, wherein said cable headend further comprises a network controller for providing electronic mail services.
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15. The system according to claim 12, wherein the hardware upgrade further comprises a telephone modem, connected to the menu generator adapted to provide communications capability with on-line databases, interactive services and message services.
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16. A method for enhancing the functionality of a set top converter in a television program delivery system, each set top converter having a mailbox adapted to receive electronic mail, the method comprising the steps of:
- providing an electrical connection between the set top converter and the mailbox, whereby the electronic mail is transferred from the set top converter for processing;
  - storing interactive programming instructions;
  - accessing the stored interactive programming instructions; and
  - processing the electronic mail to produce processed electronic mail based on the stored interactive programming instructions.
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17. The method according to claim 16, wherein said television program delivery system comprises digital video.
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18. The method of claim 16, further comprising the step of:

transferring data between the set top converter and the mailbox in either serial or parallel format.

19. The method according to claim 16, wherein said step of providing an electrical connection to the set top converter further comprises:

receiving subscriber inputs from the set top converter, wherein the received subscriber inputs includes textual information that is used to produce the processed electronic mail; and

transferring the processed electronic mail to the set top converter for display.

20. The method according to claim 16, further comprising the step of communicating with on-line databases, interactive services and message services outside of the television program delivery system.

21. The method according to claim 19, further comprising the step of: storing the processed electronic mail.

22. A method for using an advanced set top terminal with a television program delivery system comprising the following steps:

storing menu content information;

receiving digitally compressed program signals and a control information stream;

processing the control information stream to produce processed control information;

updating the stored menu content information to produce updated menu content information;

generating message and menu displays using the updated menu content information, whereby the menu displays produce subscriber options for selection of other menus and television programs;

selecting the other menus, the television programs or a message display; and

tuning to one of the digitally compressed television programs signals to produce a tuned television program signal.

23. The method according to claim 22, wherein said television program delivery system comprises digital video.

24. The method according to claim 22, further comprising the step of:  
processing the tuned television program signal to produce a video signal and audio signal for television display and listening.

25. The method according to claim 22, further comprising the steps of:  
entering electronic mail into a mailbox;  
storing interactive programming instructions;  
accessing the stored interactive programming instructions;  
executing the stored interactive programming instructions to produce electronic mail signals; and  
transmitting the produced electronic mail signals to the cable headend.

26. The method according to claim 25, further comprising the step of communicating with on-line databases, interactive services and message services outside of the television program delivery system.

27. A method to provide a subscriber electronic mail services with a remotely located computer using a series of individual menus, comprising:  
generating menu control information in digitally compressed form at an operations center;  
transmitting said digitally compressed menu control information to a cable headend;  
retransmitting said digitally compressed menu control information to at least one television terminal; and  
displaying menus on a television, wherein said step of displaying further comprises the steps of:

decompressing the menu control information;  
generating menus from the menu control information;  
interactively entering subscriber inputs using said displayed menus;  
communicating with the remotely located computer;  
receiving electronic mail from the remotely located computer; and  
integrating the electronic mail into menus.

28. The method according to claim 27, wherein said television program delivery system comprises digital video.

29. The method according to claim 27, wherein the remotely located computer further comprises a network controller for providing electronic mail services.

30. The method according to claim 27, further comprising the step of communicating with on-line databases, interactive services and message services outside of the television program delivery system.

31. An advanced set top terminal for use with a television program delivery system comprising:

a subscriber interface for entry of electronic mail;  
at least one memory for storing the electronic mail and for storing interactive programming instructions;  
at least one processor connected to the memory and the subscriber interface for accessing the stored interactive programming instructions and for executing the stored interactive programming instructions to produce interactive signals which include electronic mail; and  
a data transmitter connected to the at least one processor for transmitting the produced interactive signals.

32. The advanced set top terminal according to claim 31, wherein said television program delivery system comprises digital video.

33. The advanced set top terminal according to claim 31, for use with on-line databases, interactive services and message services outside of the cable television program delivery system, further comprising a telephone modem, connected to the data transmitter adapted to provide communications capability with the on-line databases, the interactive services and the message services.

34. The advanced set top terminal according to claim 31, wherein said data transmitter transmits the produced interactive signals to an operations center.

35. The advanced set top terminal according to claim 31, wherein said data transmitter transmits the produced interactive signals to a cable headend or other remote location.

36. A method for using an advanced set top terminal in a television program delivery system, comprising the steps of:  
entering electronic mail;  
storing the electronic mail;  
storing interactive programming instructions;  
accessing the stored interactive programming instructions;  
executing the stored interactive programming instructions to produce interactive signals which include electronic mail; and  
transmitting the produced interactive signals.

37. The method according to claim 36, wherein said television program delivery system comprises digital video.

38. The method according to claim 36, further comprising the step of communicating with on-line databases, interactive services and message services outside of the television program delivery system.



39. The method according to claim 36, wherein said step of transmitting further comprises transmitting the produced interactive signals to an operations center.

40. The method according to claim 36, wherein said step of transmitting further comprises transmitting the produced interactive signals to a cable headend or other remote location.

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